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WHAT IS CLAIMED IS:

- Sub B1
- AM
1. (Currently Amended) A method of generating a normalized bitmap representation of the shape of a visual object in an image comprising the steps of:
 - segmenting the image to generate a segmentation map of visual objects;
 - identifying samples from the segmentation map belonging to a visual object of interest;
 - identifying the largest connected blob to form an un-normalized bitmap;
 - and
 - normalizing the un-normalized bitmap to form the a normalized bitmap representation.
 2. (Original) The method as recited in claim 1 further comprising the step of searching a database of images, each image having associated visual objects with normalized bitmap representations, in response to a query specifying a desired normalized bitmap representation to identify a plurality of visual objects having normalized bitmap representations that closely match the desired normalized bitmap representation.

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3. (Original) The method as recited in claim 1 wherein the normalizing step comprises the steps of:

estimating a mean and covariance for each valid sample in the un-normalized bitmap;

computing a principal direction for the un-normalized bitmap based upon the mean and covariance as eigenvectors of a covariance matrix; and

back projecting the un-normalized bitmap as a function of the mean and eigenvectors to normalize the un-normalized bitmap for translation, rotation and scale so that after normalization the normalized bitmap representation has a standard height and is oriented such that the principal direction is along a vertical direction.

4. (Original) The method as recited in claim 2 wherein the searching step comprises the steps of:

providing a query bitmap seeking similarly shaped visual objects from the database;

normalizing the query bitmap;

obtaining various mirror versions of the normalized query bitmap;

for each normalized bitmap representation in the database compute a mismatch value with the normalized query bitmap; and

identifying the visual objects having normalized bitmap representations with low mismatch values.

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5. (Original) The method as recited in claim 2 wherein the searching step comprises the steps of:

providing a query bitmap to find visual object in the database having a similar aspect ratio;

normalizing the query bitmap;

computing a query aspect ratio for the normalized query bitmap;

computing an aspect ratio for each normalized bitmap representation in the database;

obtaining an absolute difference between the aspect ratios for each normalized bitmap representation and the query aspect ratio; and

identifying the visual objects where the absolute difference has low values.

6. (Original) The method as recited in claim 2 wherein the searching step comprises the steps of:

providing a query bitmap to find visual objects with a similar density of valid samples;

computing a query density of valid samples for the query bitmap;

computing a density for each normalized bitmap representation in the database;

obtaining an absolute difference between the density for each normalized bitmap representation and the query density; and

identifying the visual objects where the absolute difference is low.

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7. (New Claim) A method of searching for representations of visual objects using a search system capable of comparing attributes of visual images, comprising the steps of:

matching similar data representing an value of an aspect ratio, and a density value corresponding to visual objects in a database;

listing the visual objects that have attributes that approximately match the aspect ratio and density values.

8. (New Claim) The method of Claim 7, wherein the density value matched to at least one of: a percentage less than an inputted value, and a percentage greater than an inputted value.